

CLAIMS

1. A turbine blade cascade structure in which a plurality of blades are provided in series on a wall surface in a circumferential direction, wherein a corner portion between the wall surface and a front edge portion of each of blade bodies supported by the wall surface, to which a working fluid flows is provided with a coating portion that extends to an upstream side of a flow of the working fluid.

2. The turbine blade cascade structure according to claim 1, wherein at least one of a root side and a tip side of the blade body is provided with the coating portion.

3. The turbine blade cascade structure according to claim 1, wherein the coating portion is formed as a protruded portion that is raised from the upstream side to a height direction of the front edge portion of the blade body.

4. The turbine blade cascade structure according to claim 3, wherein the protruded portion is formed to have a concave curved surface from a base portion at the upstream side to the height direction of the front edge portion of the blade body.

5. The turbine blade cascade structure according to claim 4, wherein the protruded portion having the concave curved

surface is formed to establish relationships of $L_0 = (2 - 5)H_0$ and $H_0 = (0.5 - 2.0)T$, where L_0 represents a distance from the base portion to the front edge portion of the blade body, H_0 represents a distance from the wall surface to the height direction of the front edge portion, and T represents a thickness of a boundary layer of the working fluid.

6. The turbine blade cascade structure according to claim 4, wherein the protruded portion having the concave curved surface is formed into a fan-like configuration that extends to a front side and a back side of the blade body with respect to a stagnation point of the working fluid that collides against the front edge portion of the blade body.

7. The turbine blade cascade structure according to claim 6, wherein an angle θ of a sector of the protruded portion having the fan-like configuration with respect to the stagnation point of the working fluid that collides against the front edge portion of the blade body is set to be in a range between $\pm 15^\circ$ and $\pm 60^\circ$.

8. The turbine blade cascade structure according to claim 1, wherein the coating is formed as a protruded portion that is raised from the upstream side to the height direction of the front edge portion of the blade body, which is formed by selecting one of a coating connecting piece which has been preliminarily made as an independent member, a machined piece together with the

blade body, and a welded deposit.

9. The turbine blade cascade structure according to claim 1,
wherein the blade body is supported by at least one of the wall
5 surface at a root side of the blade body and the wall surface at a
tip side of the blade body.

10. The turbine blade cascade according to claim 9, wherein
the blade body is supported by the wall surface at the root side,
10 and the wall surface includes a straight downward inclined
surface linearly angled from the front edge portion of the blade
body toward the upstream side.

11. The turbine blade cascade according to claim 9, wherein
15 the blade body is supported by the wall surface at the root side,
and the wall surface includes a downward inclined curved
surface curved from a center of a width of the blade body toward
the upstream side of the front edge portion.

20 12. The turbine blade cascade according to claim 9, wherein
the blade body is supported by the wall surfaces at the root side
and the tip side, and the wall surfaces include a downward
inclined surface and an upward inclined surface linearly angled
from the front edge portions at the root and the tip sides toward
25 the upstream side.

13. The turbine blade cascade structure according to claim 9,
wherein the blade body is supported by the wall surfaces at the
root side and the tip side of the blade body, and the wall
surfaces include downward and upward inclined curved surfaces
5 curved from a center of a width of the blade body toward the
upstream side of the front edge portion.

14. The turbine blade cascade structure according to claim 9,
wherein the blade body is supported by the wall surfaces at the
10 root side and the tip side, and the wall surface for supporting
the blade body at the root side includes a downward inclined
surface curved from the center of the width of the blade body to
the upstream side of the front edge portion, and the wall surface
for supporting the blade body at the tip side includes an upward
15 inclined surface linearly angled so as to extend from the front
edge portion of the blade body toward the upstream side.

15. The turbine blade cascade structure according to claim 1,
wherein the wall surface for supporting the blade body is
20 structured to be flat.